

## SYSTEM FOR LOADING AND UNLOADING FLUID PRODUCTS

### CROSS REFERENCE TO RELATED APPLICATION

This is a continuation of U.S. Patent Application SN  
5 10/009,237, filed May 13, 2002, which is the U.S. National  
Stage of International Application No. PCT/NO00/00201, filed  
June 9, 2000.

### BACKGROUND OF THE INVENTION

10 The present invention relates to a system for loading  
and unloading fluid products from a vessel.

In connection with the anchoring of vessels in such a  
situation, it is desired to arrive at a flexible solution so  
that any type of tanker (ship) can be used in the operation,  
15 independent of waves or sea depths.

### SUMMARY OF THE INVENTION

The mentioned object may be reached with a loading and  
unloading system according to the present invention.

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## BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a schematic front view of a ship with a frame according to the invention;

Figure 2 is a corresponding view of a ship with another  
5 embodiment of the invention; and

Figure 3 is a schematic side view of the frame with the attached hose ready for loading or unloading operations.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

10 As shown in Figure 1, the frame 2 is equipped with a coupling device 8 for coupling to the bottom of a ship 1. The coupling device 8 may be formed as suction cups, magnets or possibly cushion-like devices, which ensure contact of the frame 2 against the bottom of the ship by means of the  
15 buoyancy force of the frame 2.

The frame 2 has a turret-coupling 3 to which a liquid hose 4 may be coupled for supply of liquid, for example, oil, from, for example, floating installations, permanent installations, submersible buoys, loading towers and the  
20 like. From the turret-coupling 3 runs a hose 9 to a coupling 7 on the ship for transport of liquid to or from the ship's tanks.

The frame 2 may conveniently be equipped with propellers 10 for maneuvering to placement under the ship 1. The frame 2 is held in position by means of a dynamic positioning system (DP-system), possibly with permanent  
5 anchoring.

Power supply for the frame 2 takes place from a control centre, which may be the production ship, a storage ship, a production platform, or a shore station. The frame is steered to its position at the bottom of the ship 1. As the  
10 ship's bottom cannot be equipped with devices to receive a frame 2, the operation of fastening the frame 2 to the ship 1 will be relatively uncomplicated, in that neither orienting in relation to the ship 1 or placement in the ship's 1 longitudinal direction will be critical. Steering  
15 and control of the frame is remotely controlled from the control centre.

Figure 2 shows another embodiment of the invention, where a short dock-like construction 5,6 similarly has its own maneuvering propellers 10 and where the power supply to  
20 the maneuvering and the steering of the construction takes place from the dock-like construction 5,6. The construction 5 has preferably its own steering and control room, separate

room for power supply units and separate rooms for ballast tanks and pumps. The two vertical walls of the construction 5,6 are at the bottom connected with a frame 2.

By means of the turret-coupling 3, the frame 5 construction may rotate so that the tanker may turn by the wind and weather.

By means of the DP-system it is assured that the tanker is held in exact position during loading and unloading to another vessel or to the shore, for example, in places 10 lacking suitable docking facilities.